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Studies in the Botany of the Southeastern United States.—XIV.

By JOHN K. SMALL.

I. HITHERTO UNDESCRIBED SPECIES.

NYMPHAEA MACROPHYLLA.

Perennial from very thick horizontal rootstocks, bright green. Foliage glabrous or nearly so: leaves (emersed) leathery; petioles short, sometimes sparingly pubescent; blades oblong-ovate, 3–8 dm. long, obtuse, notched at the apex, 1–2.5 dm. broad at the middle; sinus V-shaped, or rarely closed: flowers erect, subglobose, 3–5 cm. in diameter: sepals leathery, 2.5–3 cm. long, concave: petals yellow, slightly longer than the sepals: stamens numerous: stigmatic disk becoming 3–3.5 cm. broad, often deeply crenate, the coarse stigmatic lines not approaching the edge: capsule ovoid, 3–4 cm. high, coarsely ribbed above the middle: seeds subglobose, 5–6 mm. in diameter.

In ponds, creeks and slow streams, Florida to Louisiana. Spring to fall.

Both old and recent specimens of the common species of *Nymphaea* of Florida and the other Gulf States indicate that it is specifically distinct from the northern *Nymphaea advena*. Plants belonging to this segregate may be recognized by the very large leaf-blades which are of a peculiar ovate-oblong shape and with a midrib that dries flat. In the flower the larger stigmatic disk is often much more deeply crenate than in the case of *Nymphaea advena* and its stigmatic lines, although larger, terminate remotely from the edge of the disk.

I have seen specimens from several of the Gulf States:

[Issued 10 September.]

Florida: In tidal creeks, Duval Co., May; *A. H. Curtiss*, no. 102. Eustis Lake Co., Aug. 16–25, 1894, *G. V. Nash*, no. 1751. Miami river, March 7, 1892, *J. H. Simpson.* Apalachicola, *Chapman.*

Louisiana: Hale.

AQUILEGIA AUSTRALIS.

Perennial, bright green. Stem erect, usually solitary, 3–9 dm. tall, branching above, finely pubescent or glabrate in parts: leaves with slender petioles, except on upper part of the stem; blades twice ternate; leaflets thin, reniform, suborbicular or orbicular-obovate, 1–2 cm. long, glaucescent, especially beneath, crenately toothed or lobed, rounded or subcordate at the base: corolla mainly scarlet: sepals erect, lanceolate or oblong-lanceolate, somewhat acuminate, 1.5 cm. long, scarlet: spurs 3–3.5 cm. long, rather abruptly narrowed below the middle: styles more than twice as long as the ovary: follicles about 1.5 cm. long, about as long as the bristle-like style.

On limestone cliffs and bluffs, Florida to Texas. Spring.

Several specimens of this hitherto undescribed species have been lying in the herbarium of Columbia University for many years. The species apparently belongs to that class of plants which is peculiar to the Gulf States. It can be distinguished from *Aquilegia Canadensis* at a glance by its more slender habit, pale green or glaucescent foliage and especially by the narrow elongated sepals. The spur is more abruptly narrowed below the middle than it is in *Aquilegia Canadensis.*

The following specimens are referred here:

Florida: Lime cliffs, Marianna, *Chapman.*

Texas: Blanco Bottoms, April, 1856; Valley of the Blanco, *Wright.*

HEUCHERA MACRORHIZA.

Perennial, bright green. Rootstocks stout, woody, 1–3 dm. long, scaly: leaves basal; petioles 1–3 dm. tall, densely villous; blades suborbicular in outline, 8–20 cm. in diameter, shallowly 5–9-lobed (lobes much broader than long), sharply, closely and irregularly dentate with apiculate teeth, pubescent on both sides, sparingly so above, densely ciliate, cordate: scapes erect or nearly so, 2–5 dm. tall, naked or with several scales, surpassing the leaves: panicles 5–12 cm. long, nearly cylindric: calices densely pubescent, 2 mm. long or 2.5 mm. long at maturity; tube campanulate; segments oblong or ovate-oblong, about as long as the tube, erect: petals linear from a filiform base, fully twice as long as the calyx-segments: capsules about equaling the calyx at maturity, tipped by the slender styles.

On river bluffs near Nashville, Tennessee. Summer. This relative of *Heuchera villosa* is apparently about as restricted in its distribution as that species is widely dispersed. The two species are quite similar in habit, but differential characters are plentiful from the rootstock to inflorescence. The woody rootstock varying from 1.5–2 cm. thick is unknown in *Heuchera villosa.* The pubescence wherever present is of a different type, the individual trichomes being shorter and stouter. A conspicuous character is the shallowly many-lobed leaf-blades with their closely dentate margins. A peculiar and apparently constant difference exists in the inflorescence: in the case of the species just described the pedicels are more densely pubescence than the calices, while in the case of *Heuchera villosa* the calyx is the more densely pubescent member.

The original specimens were collected by Dr. Gattinger along the Cumberland River at Nashville, Tennessee, August, 1878. These specimens are in the Gattinger Herbarium at the University of Tennessee. I am indebted to Prof. S. M. Bain for the use of this material.

EUPHORBIA APOCYNIFOLIA.

Perennial, bright green. Stems solitary or tufted, erect or ascending, 2–6 dm. tall, slender, sparsely pubescent or glabrate, zigzag, at least at maturity, topped by a 2–3-rayed umbel: rays dichotomous, wire-like or filiform, ascending: leaves alternate except the whorl or pair subtending the umbel; blades thinnish, oblong to oval, 2–7 cm. long, obtuse, slightly revolute, pale beneath, with glaucous midrib; petioles 3–6 mm. long, densely villous: bracts opposite, similar to the leaves but smaller: peduncles filiform, glabrous: involucres campanulate, barely 1.5 mm. high, glabrous: glands transversely oblong, about 0.5 mm. broad: appendages white, orbicular-cuneate, 1.5–2 mm. long, rounded at the apex.

In sandy soil, Florida. Fall.

Euphorbia apocynifolia is related to *Euphorbia corollata* but differs in the more slender habit, the broader and thinner leaf-blades and the densely villous petioles. The petal-like appendages are smaller than those of *Euphorbia corollata* and are rounded at the apex. The habit of the newly described species suggests that of *Euphorbia paniculata.*

The original specimens of *Euphorbia apocynifolia* were collected by Mr. Geo. V. Nash at Quincy, Gadsden County, Florida, on September 4, 1895, number 2567.

SIDA LEPTOPHYLLA.

Perennial (?), thinly pubescent. Stems erect, over 10 dm. tall (in specimens seen), widely branching: leaves numerous, blades thin, linear to linear-oblong, 2–10 cm. long, acute, sharply serrate with short flaring teeth above a short entire base, paler beneath than above, obtuse or rounded at the base; petioles 3–10 mm. long; stipules subulate, filiform: pedicels 2–8 mm. long: calices finely pubescent; segments 4–5 mm. long, triangular, acute, or somewhat acuminate, about as long as the tube: corollas about 2.5 cm. broad: fruit 6–7 mm. broad; carpels 2-ridged above, not pointed, glabrous.

In sandy soil, Georgia.

This species gives us an eastern relative of *Sida Lindheimeri.* It is related to *Sida Neo-Mexicana* by its inflorescence, mainly by the short peduncles, but in other parts and in habit it is more like *Sida Lindheimeri.* From the latter species it differs by the short-peduncled, often clustered flowers, the thinner leaf-blades with their finer and sharper teeth and the glabrous pointless carpels. The specimens on which the species is founded were collected in Georgia by Dr. Boykin and his label contains this record, "This is the large flowering *Sida,* of which there are seeds in the other box. If not *S. gracilis,* is new. I have thought it not described by Mr. E. [lliott] and if so incorrectly."

RHEXIA FILIFORMIS.

Perennial, slender, sparingly pubescent. Stems erect, wire-like, 1–4 dm. tall, villous-hirsute, simple or branched, terete or nearly so; branches filiform: leaves quite numerous; blades linear-filiform or filiform, 1–3 cm. long, acute, serrulate, sessile, the larger ones involutely folded: flowers in open cymes, short-pedicelled: calyx glabrous; segments lanceolate, acuminate: corollas white or pale purple; petals less than 1 cm. long: anthers linear, 6 mm. long, spurred at the base: capsules subglobose.

In sandy soil, Georgia and Florida. Summer.

While collecting along the southern border of Georgia I met this delicate little species of *Rhexia* at various places. It is related to *Rhexia lanceolata* but is smaller and all its parts are much more slender. The linear-filiform or filiform leaves, the small corollas and the glabrous calices are all diagnostic characters readily separating *Rhexia filiformis* from *Rhexia lanceolata.*

CONRADINA PUBERULA.

A much branched shrub, 3–7 dm. tall: foliage cinereous-puberulent: leaves numerous, often clustered in axils; blades narrowly linear, 1–2.5 cm. long, obtuse, entire, strongly revolute, sessile: clusters 2–6-flowered, often forming a continuous raceme; pedicels commonly 1–2 mm. long: calices 5–6 mm. long, puberulent, tubes slightly ribbed; upper lip with 3 ovate or ovate-lanceolate acute ascending teeth; lower lip with 2 lanceolate-subulate teeth: corollas 12–15 mm. long; tube as long as the calices or nearly so; upper lip retuse; lower lip 3-lobed, lateral lobes rounded, middle lobe cuneate-flabellate, deeply notched: nutlets 1 mm. long, globose-oval, smooth and glabrous.

In sand, Florida. Spring and summer.

Conradina is not a monotypic genus, for it is perfectly clear that two distinct species have been associated under the name *Conradina canescens.* Both species are peculiar to Florida, and the one heretofore undescribed is apparently the more widely distributed. *Conradina puberula* may be distinguished from *Conradina canescens* at a glance by the larger size of all its parts and the puberulence of its foliage, hirsute pubescence being usually absent and being found, if present, only about the mouth of the calyx. The calyx is longer than that of *Conradina canescens.* Prominent characters exist in the corolla, in which the upper lip is retuse and the middle lobe of the lower lip is cuneate-flabellate and deeply notched. In *Conradina canescens* the upper lip is rounded, and the rounded middle lobe of the lower lip is not prominently produced beyond the lateral lobes. The newly described species is represented in the herbarium of Columbia University as follows:

Florida: Apalachicola, old specimen, collector uncertain; later specimen, *A. H. Curtiss*, no. 2014. Also two specimens collected by Dr. Chapman.

The habit of *Conradina puberula* suggests that of *Hypericum galioides.*

KOELLIA BEADLEI.

Perennial, deep green. Stem erect or ascending, 5–8 dm. tall, simple or sparingly branched, minutely pubescent: leaves opposite, lower glabrate but resinous-dotted, the floral slightly canescent; blades oblong-lanceolate, or those of the branches elliptic-lanceolate to ovate, all acute or acuminate, 3–8 cm. long, serrate, rounded or subcordate at the base; petioles 1–3 mm. long: clusters solitary or few, terminal, dense, 1–2 cm. broad: bracts narrowly linear or slightly broadened at the middle: calices puberulent, 4–5 mm. long, tube finely ribbed; teeth triangular-lanceolate, with subulate tips barely one third as long as the tube: corollas 6–7 mm. long; tube not surpassing the calyx; upper lip oblong, obtuse; lower lip 3-lobed, middle lobe oblong, notched, lateral lobes rounded: filaments and style glabrous.

On rocks, mountains near Highlands, North Carolina. Summer and fall.

The center of distribution of the *Koelliae* furnishes us with still another species. The plant in question is related to *Koellia pycnanthemoides*, but the leaves and stem are destitute of the peculiar pubescence characteristic of such plants as *Koellia pycnanthemoides*, *K. albescens* and *K. incana.* The leaves suggest those of certain species of the genus *Monarda.* They are conspicuous on account of a very fine sprinkling of sparkling glands and the prominent whitish nerves beneath. The calyx-segments are subulate from a triangular lanceolate base and barely one third as long as the tube.

The original specimens were collected on mountain rocks, Highlands, Macon County, North Carolina, September 14, 1897. They were distributed by the Biltmore Herbarium, for whose curator the species is named. It is numbered 5744.

PENTSTEMON CALYCOSUS.

Perennial, minutely pubescent or glabrate. Stem erect, 4–7 dm. tall, simple below: leaves various; basal and lower stem-leaves spatulate, upper stem-leaves opposite; blades oblong to lanceolate, acute or acuminate, sharply serrate, closely sessile and partly clasping: panicles rather loosely flowered: calices sparingly glandlar-pilose, segments about 1 cm. long, with a narrowly lanceolate base and narrowly linear tip: corolla purple, about 2.5 cm. long; tube abruptly dilated about the middle; segments ovate or broadly oblong-ovate, those of the upper lip much smaller than those of the lower: sterile filaments sparingly bearded above the middle: capsules ovoid, 5–6 mm. high.

On bluffs, Tennessee and Louisiana. Spring.

In a former number of this journal* I published a note on the occurrence of *Pentstemon Smallii* at Nashville, Tennessee. A further study of the section of *Pentstemon* to which the species in question belongs convinces me that the Nashville plants are specifically distinct from any described form. The elongated calyx-segments are diagnostic. An old specimen with mature fruit but no flowers preserved in the herbarium of Columbia University seems to belong in *Pentstemon calycosus.* Its label bears this record, "Fertile soils, Louisiana, Hale; April."

PENTSTEMON HELLERI.

Perennial, mostly puberulent, or glabrate, below the inflorescence, thence minutely glandular-pubescent. Stems erect or ascending, 3–6 dm. tall, simple up to the inflorescence: leaves opposite, glabrous or nearly so, lustrous; blades various, those of the basal and lower stem leaves oblong-spatulate or nearly linear, 6–10 cm. long, acute, narrowed into winged petioles, blades of upper leaves oblong to broadly ovate, acute, sessile; all undulats or slightly toothed: calices densely glandular-pubescent; sege ments ovate to elliptic-ovate, 8–10 mm. long, acutish: corollas white or rose, sometimes tinged with blue, minutely glandular-pubescent, 3–3.5 cm. long, rather gradually enlarged, upper lip with shallowly notched lobes, lower lip with truncate or retuse lobes: capsules conic-ovoid, at least 1 cm. long, not reticulated, much surpassing the calyx.

On prairies, Kerrville, Texas. Spring.

Mr. Heller informs me that he very reluctantly associated the name *Pentstemon Cobaea* with his number 1610 in his distribution of "Plants of Southern Texas." These specimens form the type of a species perfectly distinct from *Pentstemon Cobaea.* Plants belonging here may be found under the name *Pentstemon Cobaea* in vari-

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*Bull. Torr. Bot. Club, **21**: 304. 1894.

ous herbaria, but they may be separated by the much smaller and differently shaped corollas and the smaller capsules which conspicuously surpass the calyx. The original specimens are from Kerrville, Kerr County, Texas, collected in April and June, 1894.

LACINARIA FLABELLATA.

Perennial from globose or spheroidal corms, showy. Stems erect, 3–6 dm. tall, simple, lanuginose, angled, usually solitary: leaves rather numerous; blades linear or nearly so, lower ones 5–10 cm. long, acute or acutish, spreading, narrowed into margined petioles, upper much reduced, sessile, more or less strongly reflexed, all densely punctate, glabrous: racemes conspicuous, 1–2 dm. long, 3 cm. thick: heads narrow, ascending, 1–1.5 cm. long: bracts linear-lanceolate to linear, outer somewhat keeled, with spreading entire or denticulate acuminations, inner with pale magenta fan-shaped erose-dentate tips: pappus bristles somewhat plumose, rather few: achenes densely pubescent.

In dry open woods, St. Helena Island, South Carolina. Fall.

One of the neglected and yet extremely interesting portions of the Southern States is the territory formed by the numerous islands along the Atlantic coast. Collections from some of these islands have lately been put at my disposal by Mr. A. Cuthbert, and the indications are that a complete series of specimens representing the flora of the region in question would reveal many curious and hitherto unknown species. One of the more interesting plants from these islands is the above described *Lacinaria*, which makes a second species for the group in which *Lacinaria elegans* has previously stood alone. *Lacinaria flabellata* is of smaller stature than *L. elegans*. Chief among other differences between the two species is the character of the inner bracts of the involucres. The dilated, toothed, rounded or truncate tips of the bracts have nothing parallel in *L. elegans*. The original specimens were collected by Mr. A. Cuthbert on St. Helena Island, South Carolina, September, 1894.

LACINARIA LAXA.

Perennial, thinly tomentulose, or leaves glabrate. Stems erect, 4–6 dm. tall, stoutish, racemose above: leaves rather numerous; blades linear, sometimes rather broadly so, 1–2 dm. long, lower ones narrowed into short winged petioles, upper sessile, much reduced : peduncles villous, longer than the heads or shorter : heads loosely disposed, involucres short, about 5 mm. high, campanulate : bracts oblong or oblong-lanceolate, obtuse or acutish, keeled, conspicuously ciliate, lax at maturity, outer purple, inner purple-tipped : pappus barely barbellulate : achenes 3–3.5 mm. long, finely but rather densely pubescent.

In sand, Cape Florida, Florida. Spring.

The above is most closely related to *Lacinaria graminifolia pilosa*, but the characteristic ciliation of the petioles is lacking and the involucres are campanulate and shorter. The bracts of the involucres are shorter and narrower at the apex and very characteristic on account of the copious and conspicuous cilia.

The original specimens were collected by Mr. J. H. Simpson at Cape Florida, Florida, on March 14, 1892.

LACINARIA REGIMONTIS.

Perennial from small subglobose rootstocks, nearly glabrous. Stems erect, 3–9 dm. tall, usually paniculately branched, sometimes spicately racemose : leaves rather few, 1–2 dm. long or longer, reduced above; blades narrowly linear, narrowed into winged sparingly ciliate petioles below, sessile above, all erect or ascending : involucres numerous, cylindric, becoming obconic, 8–10 mm. high, conspicuous on account of the slightly spreading bracts, erect or ascending, short-peduncled or some nearly sessile : bracts oblong-ovate to linear-oblong, acute to mucronate or the inner slightly hooded, the outer sometimes obtuse, all glandular-punctate, ciliolate, mostly with ring-like margins : pappus barbellulate : achenes 3.5–4 mm. long, ribbed, sparingly pubescent.

On wooded slopes, King's Mountain, North Carolina. Summer and fall.

The species just described suggests *Lacinaria graminifolia pilosa* in habit, but it has a very characteristic involucre ; this member becomes obconic and quite elongated at maturity, while the bracts, excepting some at the base of the involucres, are acute or mucronate, densely punctate and conspicuously wing-margined.

The original specimens were collected by the writer on the slopes of King's Mountain, North Carolina, on August 27 and 30, 1894.

LACINARIA MICROCEPHALA.

Perennial from ovoid or subglobose corms. Stems erect or ascending, rather slender, 3–7 dm. tall, solitary or tufted, striate-ridged, strict, rather slender, simple at least below the inflorescence: leaves numerous; blades linear, very narrowly so except those of lower leaves, 5–10 cm. long or shorter above, erect or strongly ascending, sparingly punctate, lower ones narrowed into sparingly ciliate petioles: heads numerous, slender, short-peduncled or the peduncles sometimes elongated and minutely bracted: involucres cylindric, 5–7 mm. high: bracts glabrous or nearly so, erect, appressed, obtuse, outer ovate, inner oblong, much longer than the outer, pappus-bristles coarsely barbellulate: achenes cuneate, about 2.5 mm. long, densely pubescent.

In sandy soil, Cumberland Mountains, Tennessee. Summer.

The segregate just described has heretofore been associated with *Lacinaria graminifolia.* However, its foliage is glabrous except for an occasional cilium on the petioles of the lower leaves or the edge of the involucral bracts. The cylindric heads are only about one-half as large as those of *Lacinaria graminifolia* and contain few flowers.

The original specimens were collected by Dr. Gattinger at Tullahoma, on the Cumberland Mountains, Tennessee, in August, 1867; September, 1877; August, 1878, and the fourteenth day of the same month, 1886. I am indebted to Prof. S. M. Bain, of the University of Tennessee, for the loan of the above cited specimens from the University Herbarium.

SOLIDAGO DELICATULA.

Perennial, smooth and glabrous, deep green. Stems erect, 5–10 dm. tall, ridged, sparingly or widely branched above, strict: leaves numerous; blades thinnish, somewhat parchment-like at maturity, linear-elliptic to linear-lanceolate or nearly linear, 2–8 cm. long, acuminate, sharply serrate, beyond the gradually narrowed base, sessile or with short winged petioles: panicle narrow or, when well developed, with widely spreading and recurved branches: heads numerous, 3.5–5 mm. high, short-peduncled, contiguous: involucres narrow: bracts narrowly lanceolate to narrowly linear, acute, very variable in length: flowers 3–6: rays yellow, often 2–3, linear-oblong, 1.5–2.5 mm. long: achenes minutely pubescent.

On prairies, northern Texas.

The specimens here described form a very characteristic species. This is related to *Solidago rupestris* but differs in its usually more lax habit and the absence of pubescence except the cilia of the leaves. With this exception the plants are smooth and glabrous throughout. The foliage is of a much deeper green than that of *Solidago rupestris* and the upper surface of the leaves is lustrous. The heads are twice as high as those of *Solidago rupestris* and suggest those of *Solidago odora.* The original specimens were collected by Mr. James S. Merriam, near Paris, in northern Texas, in 1872.

SOLIDAGO NASHII.

Perennial, deep green. Stems erect, 6–10 dm. tall, simple below the rather ample panicle, more or less pubescent, especially above the middle, striate, nearly straight: leaves numerous; blades linear or narrowly linear, 4–10 cm. long, attenuate at both ends, finely but rather remotely serrate or nearly entire, sessile: heads numerous, 5–6 mm. high, short-peduncled, contiguous: involucres campanulate at maturity, erect: bracts linear-lanceolate to linear, acutish to obtuse, the outer pubescent: flowers 12–17, crowded: rays yellow, 3–4, linear: achenes 1–1.5 mm. long, minutely pubescent.

In hammocks, middle and peninsular Florida. Spring.

Plants belonging here have hitherto been referred to *Solidago Leavenworthii*, but their true relationship is rather with *Solidago rupestris* and its allies. Like *Solidago rupestris* the foliage below the inflorescence is glabrous or nearly so, but the heads are at least twice and often thrice as large and the bracts and flowers more numerous.

The original specimens are both from Florida. The first one was collected many years ago in Middle Florida by Dr. Chapman. The second was collected by Mr. Nash at Eustis, peninsular Florida in May, 1894, no. 691.

SOLIDAGO DISPERSA.

Perennial, glabrous or nearly so. Stems erect, 8–10 dm. tall, ridged, loosely paniculate above: panicle narrow; branches slender or filiform: leaves rather few; blades narrowly elliptic to oblong-lanceolate, 2–10 cm. long, acute or acuminate, serrate, lower ones with winged petioles, upper sessile or nearly so: heads few, loosely disposed, 6–7 mm. high; terminal ones often drooping: involucres turbinate-campanulate at maturity: bracts narrowly oblong to linear, obtuse, with green tips: flowers 9–13: rays yellow, 2–3, oblong-linear, about 3 mm. long: achenes pubescent.

In the lower country, Louisiana.

Many distinct species are now associated together under the name of *Solidago Boottii*. The one just described belongs to this series and formed part of *S. Boottii* β of Torrey & Gray.[*] It is peculiar in being glabrous or nearly so above and with more or less pubescence on the lower leaves. The inflorescence is paniculate and very loosely disposed, while the branches of the panicle and the elongated peduncles are filiform or nearly so and quite weak. The teeth of the leaf-blades are more remote and appressed than those of *S. Boottii*.

The original specimens were collected by Dr. Leavenworth in Louisiana.

SOLIDAGO PLUMOSA.

Perennial, bright green, glabrous or nearly so below the inflorescence, inclined to be glutinous, especially above. Stems erect, often tufted, 4–10 dm. high, ridged, purple, strict: leaves alternate; blades spatulate to narrowly linear, 2–30 cm. long, obtuse, acute or acuminate, thickish, entire or remotely and shallowly toothed, narrowed into slightly margined petioles or the upper ones nearly sessile with smaller ones sometimes clustered in their axils: heads numerous, in narrow terminal panicles, 5–8 mm. long, often densely disposed: involucres campanulate at maturity: bracts linear, inner ones narrowly so, obtuse, erect: flowers 11–15, crowded; rays 3–5, yellow, 5–6 mm. long: achenes 3–3.5 mm. long, glabrous.

In cañons of Yadkin River, Stanley County, North Carolina. Summer and fall.

In a former issue of this journal[†] I called attention to the form just described as *Solidago plumosa*, hoping by that means to secure further data on its distribution. I am now convinced that the North Carolina plants are specifically distinct from *Solidago Purshii*, its more northern homologue. We have in the case of *Solidago Purshii* and *Solidago plumosa* two closely related but perfectly distinct species. The much larger size of the plants in the latter, the longer heads, and the perfectly glabrous achenes, serve to separate the two species.

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[*] Fl. N. A. **2**: 215.

[†] Bull. Torr. Bot. Club, **23**: 300. 1896.

SOLIDAGO CHRYSOPSIS.

Perennial, slender, glabrous. Stem erect or ascending, wire-like, 2–3 dm. tall, paniculate above, nearly naked: leaves mainly basal or near the base of the stem, 6–20 cm. long or those on stem shorter; blades elongated linear, acute, entire or nearly so, acute, curved, slender-petioled: heads in narrow panicles 4–5 mm. high, conspicuous on account of the silvery-white pappus: involucres becoming lax: bracts thin, linear-lanceolate or linear, rather obtuse: flowers 11–14: rays yellow, several, linear: achenes finely pubescent.

In sand, Pine Key, Florida.

The specimens which form the basis of the species described above as *Solidago Chrysopsis* were included in *Solidago gracillima* by Dr. Gray and were collected by Mr. Blodgett on Pine Key, Florida. Primarily the species differs from *Solidago gracillima* in its very slender habit and the inflorescence which suggests that of some species of the genus *Chrysopsis*, similar also in habit to that of *Solidago laxa*. The stems bear very few leaves. The thin narrow linear or linear-lanceolate bracts of the involucres form a strong contrast with the thick broad bracts of *Solidago gracillima*. The several rays are also diagnostic so far as *Solidago gracillima* is concerned.

SOLIDAGO FLACCIDIFOLIA.

Perennial, glabrous below the inflorescence, bright green. Stems erect or ascending, 7–11 dm. tall, simple or nearly so, ridged, slightly zigzag: leaves alternate; blades elliptic, 6–15 cm. long, thin, acuminate, sharply serrate above the cuneate base, sessile or nearly so: heads few in axillary clusters, short-peduncled, 4 mm. high, clusters subtended by spatulate or elliptic-spatulate bracts: involucres campanulate: bracts linear, finely pubescent, obtuse, green or green-tipped: flowers 5–7, crowded: rays yellow, oblong or ovate-oblong, 3 mm. long: achenes pubescent.

On hillsides, Rome, Georgia. Fall. Like so many others of the species of the Southern States, *Solidago flaccidifolia* will doubtless prove to be a local species. It is most closely related to *Solidago pubens* from which it differs in the almost glabrous foliage, only the upper part of the inflorescence is pubescent and hairs are sparse, short and not spreading. The leaf-blades are larger and their margins are not toothed so far below the middle. The involucres are shorter than those of *Solidago pubens* and the bracts less densely pubescent and broader.

The original specimens were found at Rome, Georgia, by Dr. Chapman, in September, 1872.

SILPHIUM VENOSUM.

Perennial, glabrous or nearly so. Stems erect, scape-like, 8–12 dm. tall, slender, corymbosely branched above, glaucous, channelled: leaves basal; blades ovate to oblong, 1–3 dm. long, with deep red nerves, pinnately parted; segments linear to linear-oblong, coarsely and irregularly toothed or incised, obtuse or acute; petioles about half as long as the blades, dilated at the base: heads few, showy: involucres campanulate, about 1 cm. high: bracts broadly oblong to orbicular-oval and oblong, rounded at the apex, ciliolate: rays yellow, linear or nearly so, 1–1.5 cm. long: disk-corollas 6 mm. long; segments broadly ovate, obtuse: achenes suborbicular, 1 cm. long; wings produced into acute teeth and forming narrow U-shaped sinus.

In sand, southeastern Georgia. Spring and summer.

So far as we know the species here described for the first time is peculiar to the pine barrens about the Okefenokee swamp and the valley of the St. Mary's River in Georgia, where the writer collected specimens in June, 1895. The species is related to *Silphium compositum*, having much the same habit. Diagnostic characters exist in both the foliage and the inflorescence; the petioles of the basal leaves are much shorter than the blades; the latter members are longer and narrower than those of *S. compositum*, pinnately parted into several segments which are coarsely toothed or incised. The whole surface of the leaf-blades is delicately marked with deep red veins. The large suborbicular achenes with their broad wings and long teeth form a strong contrast with the achenes of *Silphium compositum*.

RUDBECKIA TRUNCATA.

Perennial, sparingly hirsute or glabrate. Stems erect, 3–8 dm. tall, solitary or tufted, simple or sparingly branched above: leaves various, the basal often in separate tufts; blades narrowly elliptic, 5–10 cm. long, acute or acuminate at both ends, remotely and shallowly serrate, narrowed into winged petioles, these shorter than the blades; stem leaves, except the lowest, alternate; blades linear-oblong to linear, 3–10 cm. long, acute or acuminate, remotely serrate or nearly entire, sessile by a truncate base: heads showy: involucres somewhat foliaceous: bracts linear-lanceolate or nearly linear, about 1 cm. long: rays deep yellow, linear, 1–2 cm. long, usually 10–12: disk black, depressed: disk-corollas about 3 mm. long: disk-bracts linear-oblong, acute.

In meadows and dry soils, northwestern Georgia. Summer.

While working under the State Geologist of Georgia in the northwestern and little explored part of that State, I became acquainted with an undescribed species of *Rudbeckia*. The plant was quite common in the limestone districts. *Rudbeckia truncata* differs from *Rudbeckia fulgida* by more elongated basal leaves and the prominently 3-nerved leaf-blades throughout. The blades of the stem leaves, although rather narrow, have a conspicuous truncate base. The heads are larger than those of its relative and the bracts of the involucres more coarsely hirsute.

There is a specimen almost identical with mine in the herbarium of Columbia University [Chapman Herbarium], collected many years ago at Rome, Georgia.

HELIANTHUS VERTICILLATUS.

Perennial, deep green. Stems erect, 9–18 dm. tall, branching above, smooth and glabrous almost to the heads: leaves below the inflorescence in whorls of 3's; blades firm, broadly linear or linear-lanceolate, 8–12 cm. long, somewhat acuminate, entire, revolute, shagreen-like above, sparsely pubescent beneath, nearly sessile or narrowed into short petioles: peduncles strigillose-hispidulous under the heads: heads showy: involucres campanulate-turbinate, barely 1 cm. high: bracts narrowly linear-lanceolate, ciliolate, otherwise glabrous, somewhat spreading: rays deep yellow, oblong, about 2 cm. long: disks about 1.5 cm. broad: disk-corollas 5 mm. long, triangular-ovate: disk-bracts slightly keeled, pubescent and ciliate at the apex, prolonged into 1 or 2 sharp teeth: achenes about 5 mm. long.

In wet sandy soil, western Tennessee. Summer.

The prolific flora of Tennessee makes it necessary to add another member to the genus *Helianthus*. The specimens in question were collected by Prof. L. M. Bain at Henderson, Tennessee, in August, 1892, no. 288. *Helianthus verticillatus* is related to *Helianthus giganteus*, but is easily distinguished by the smooth and glabrous stem, the narrower entire smoother leaf-blades and the narrowly linear-lanceolate bracts of the involucres.

HELIANTHUS GLAUCUS.

Perennial, deep green. Stems erect, 9–18 dm. tall, widely branching, smooth, glabrous and glaucous: leaves opposite; blades somewhat leathery, firm, lanceolate, acuminate, sharply serrate, very scabrous above, tomentulose beneath, narrowed into short-margined petioles: heads rather small: involucres campanulate, 8–10 mm. high: bracts few, lanceolate or oblong with a lanceolate tip, more or less strongly spreading, white-ciliate: rays yellow, oblong, 1–1.5 cm. long, often 5–7: disk becoming 1 cm. broad: disk-corollas 4 mm. long; segments lanceolate to oblong-lanceolate: disk bracts commonly 3-toothed at the apex, minutely pubescent: achenes 3–3.5 mm. long, oblong-obovoid, with 2 slender barbed teeth.

In dry sandy soil, North Carolina to Georgia and Florida. Summer and fall.

During my collecting trips in various parts of the Southern States I have met with a peculiar species of *Helianthus* for which no provision is made in any of our descriptive works. The species is most closely related to *Helianthus Schweinitzii* from which it differs in the smooth and glaucous stems, the more finely tomentulose lower surfaces of the leaf-blades and the smaller heads and narrower involucres with their broader and shorter bracts, many of these usually recurving about the middle. Typical specimens were collected by the writer on Dunn's Mountain, Rowan County, North Carolina, August, 1894; Stone Mountain and vicinity, Georgia, and on Little Stone Mountain, Georgia, September, 1894.

HELIANTHUS POLYPHYLLUS.

Perennial, deep green. Stems erect, 9–20 dm. tall, branching above, often stout, densely hirsute near the base, glabrous and often smooth above: leaves numerous; blades narrowly linear, 5–16 cm. long, entire, strongly revolute and apparently thick-filiform, curved: heads showy, few or numerous: involucres somewhat foliaceous: bracts linear-subulate, attenuate into subulate tips, about 1 cm. long, some drooping or recurving: rays yellow, narrowly oblong, 1.5–2 cm. long, readily shriveling: disks 1–1.5 cm. broad, depressed: disk-corollas 3 mm. long; segments triangular: disk bracts with a lanceolate or more slender middle tooth and one or more lateral ones: achenes oblong-cuneate, 3 mm. long, striate, glabrous, awnless.

In thickets, Georgia. Fall.

The Stone Mountain district or, probably more correctly, the granite region of Georgia now has its already large endemic flora increased by an additional species of *Helianthus*. The species in question was collected by the writer in thickets along meadows between Stone Mountain and Little Stone Mountain, Georgia, and also near Loganville in the same state, during September 1894. *Helianthus polyphyllus* is related to *Helianthus angustifolius*. Diagnostic characters exist in the stem which is densely hirsute near the base and glabrous above, in the numerous leaves with their very narrow perfectly revolute blades and in the heads, all parts of which are smaller and much more delicate than in the case of *Helianthus angustifolius*.

BIDENS NASHII.

Annual, glabrous. Stems erect, 10–20 dm. tall, more or less branched: leaves opposite; blades thickish, oblong to oblanceolate-oblong, 4–10 cm. long, acute, remotely and shallowly serrate, somewhat dilated at the base, sessile, upper slightly connate-perfoliate, somewhat fleshy: heads showy: involucral bracts various, outer foliaceous, linear to spatulate, unequal in length, inner more or less colored, elliptic or oval, shorter than the outer: rays deep yellow, oblong or broadly oblong-obovate, 2–2.5 cm. long: disks 1.5–2 cm. broad: achenes narrowly cuneate, 3.5–4 mm. long, with a few retrorse hairs in margins and two subulate erect awns.

In low grounds, Florida to Louisiana. Summer.

Although the above described species was long ago* recognized as more or less distinct from *Bidens chrysanthemoides* it has never been described under a distinctive name, as far as I can learn. There can be no doubt that it is specifically distinct from other members of the genus *Bidens*. Besides the specimen from Louisiana collected by Dr. Hale and cited by Torrey & Gray, we have good specimens from Florida collected by Dr. Chapman and also by Mr. Nash, no. 2336. From *Bidens chrysanthemoides* it differs in the fleshy and very smooth foliage, the short and broad remotely and hollowly toothed leaf-blades. The heads are larger and the rays usually longer and broader than those of its relative.

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*T. & G. Fl. N. A. **2**: 353.

MARSHALLIA LACINARIOIDES.

Perennial, somewhat pubescent, 3–4 dm. tall. Stems erect, sparingly branched above, leafy to near top, angled: leaves numerous, alternate, basal and those on lower part of stem 10–20 cm. long, with linear or sometimes broadly linear blades, these attenuate at the ends, prominently 3-nerved, entire, narrowed into margined petioles, other leaves with narrowly linear sessile blades, 1.5–6 cm. long, peduncles 5–9 cm. long, slender: heads small, few-flowered: involucres about 5 mm. high: bracts rigid, linear, attenuate, winged below the middle: corollas 7–8 mm. long, villous; segments linear, nearly as long as the tube.

In the low country, North Carolina to Georgia.

Marshallia lacinarioides makes the fifth species for the genus. It is related to *Marshallia graminifolia*,* but its habit is very suggestive of that of some species of *Lacinaria*, whence the specific name. It may be distinguished by the erect elongated basal leaves with their prominently 3-nerved blades. The campanulate involucres are about one half the size of those of *Marshallia graminifolia* and the heads contain but few flowers.

The original specimens were collected at Macon, Georgia, by Mr. Croom, and in North Carolina [eastern] by Mr. M. O. Curtis.

II. THE NORTH AMERICAN SPECIES OF MELOTHRIA.

That we have three species of *Melothria* instead of one in Florida is very evident from material in Mr. Nash's rich collections. So far as I can learn the first and second species following the appended key have never before been described. According to the collector they are native and very plentiful where found.

MELOTHRIA L. Sp. Pl. 35. 1753.

Key to the Species.

Berries globose. 1. *M. Nashii.*
Berries oblong or oval.
  Stems trailing and creeping; leaves broader than long, the lobes low and rounded. 2. *M. crassifolia.*
  Stems climbing; leaves longer than broad, the lobes angular. 3. *M. pendula.*

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* *Athanasia graminifolia* Walt. Fl. Car. 201. 1788.
Persoonia angustifolia Michx. Fl. Bor. Am. **2**: 104. 1803.
Marshallia angustifolia Pursh. Fl. Am. Sept. 520. 1814.

1. MELOTHRIA NASHII.

Perennial, slender, rough-pubescent. Stems trailing and creeping, 3–12 dm. long, branched, angled: leaves fleshy, suborbicular or triangular-ovate in outline, 2–3.5 cm. broad, usually 5-lobed, very rough on the surfaces, the lobes entire or with 1–2 teeth or small lobes; petioles hispid, about as long as the blades: flowers monoecious, the sterile in long-peduncled corymbs, the fertile on solitary long peduncles: calyx campanulate, minutely hispid; teeth triangular, acute, several times shorter than the tube: corolla-segments longer and narrower than the calyx-teeth: stamens included; anthers pubescent at the tips, nearly sessile: berries globose, 12–15 mm. in diameter, their peduncles about 3 cm. long.

In sandy soil about Tampa, Florida. *Nash*, no. 2469.

2. MELOTHRIA CRASSIFOLIA.

Perennial, with tuberous-thickened roots, rough-pubescent. Stems trailing and creeping, 6–15 dm. long, branched throughout, angled, sparingly pubescent: leaves thick and fleshy, reniform or orbicular-reniform, 2–4 cm. broad, usually with 5 rounded obtuse lobes, which are undulate or shallowly toothed, cordate, the sinus closed or nearly closed; petioles hispid, about as long as the blades: flowers monoecious, the sterile in long-peduncled racemes, the fertile solitary on long peduncles: calyx campanulate, minutely hispid; teeth triangular-ovate, much shorter than the tube, acute: anthers glabrous, nearly sessile: berries oblong, 1.5–2 cm. long.

In moist places about Eustis, Florida. *Nash*, no. 865.

3. MELOTHRIA PENDULA L. Sp. Pl. 35. 1753.

Annual or perennial, slender, sparingly pubescent. Stems high-climbing, branched: leaves thin, drying membranous, suborbicular or ovate in outline, 3–8 cm. broad, with 3–5 angular usually shallowly toothed lobes, both surfaces pubescent with short hairs, cordate, the sinuses open; petioles 1–3.5 cm. long, hispid: flowers monoecious; sterile racemed; fertile solitary, the peduncles about as long as the petioles: calyx glabrous or puberulent, 2 mm. long; tube campanulate, teeth very short: corolla yellow or greenish-white, 3–4 mm. broad, pubescent without, the segments ovate or obovate: berries oblong or oval, 10–25 mm. long, pendulous, dark-purple or blackish: seeds obovoid, 3.5–4 mm. long, flattened.

In swamps and light soil, Pennsylvania to Missouri, south to Florida, Texas, and Mexico.

The three following forms have been segregated as varieties of *Melothria pendula* by Prof. Cogniaux* but they are imperfectly known. When better understood, two of them, and probably all three, will prove to be distinct species.

The appended descriptions and data are mostly taken from Prof. Cogniaux's monograph.*

3a. MELOTHRIA PENDULA CHLOROCARPA (Engelm.) Cogn. in DC. Monog. Phaner. **3** : 587. 1881.

Melothria chlorocarpa Engelm.; S. Wats. Bibl. Ind. 395. 1878.

Fruit yellow, 1.5 cm. long, 1 cm. thick: seeds 5–5.5 mm. long, 3 mm. broad.

In eastern Texas (El. Hall. no. 230. in herb. Boiss.).

3b. MELOTHRIA PENDULA ASPERA Cogn. in DC. Monog. Phaner. **3** : 587. 1881.

Petioles hirsute: leaves 2–3 cm. long and broad, very scabrous on both sides, deeply lobed, lobes oblong, sometimes wholly entire, obtuse; nerves hirsute beneath: fruit and seeds as in the species.

In Florida, along fields near lake Jamony (Rugel in herb. DC.)

3c. MELOTHRIA PENDULA MICROCARPA Cogn. in DC. Monog. Phaner. **3** : 587. 1881.

Stem creeping, filiform: petioles filiform, 1–3 cm. long: leaves slightly lobed, 1.5–3 cm. long and broad, scabrous on both sides: fruit subglobose, 7–8 mm. thick.

In Alabama, Muscle Shoals, Tennessee River (Rugel in herb. Shuttleworth now Brit. Mus., DC., Boiss.).

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* DC. Monog. Phaner. 3 : 325–954.